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BIBLIOGRAPHICAL NOTICE.

A System of Practical Medicine, comprised in a series of Original Dissertations. Arranged and edited by Alexander Tweedie, M.D., F.R.S., Fellow of the Royal College of Physicians, Physician to the London Fever Hospital, and to the Foundling Hospital, etc. With Notes and Additions by W. W. Gerhard, M. D. Philadelphia: Lea & Blanchard. 1840.

This forms the second volume of the Library of Practical Medicine, edited by Dr. Tweedie. The object of the work is to present a view of practical medicine, bringing the subject to the modern times, and including the various additions which have of late years been made to the pathology of disease.

The second volume relates to the diseases of the nervous system, which is a subject offering many difficulties, and embarrassing from the imperfect classification of many of the diseases. Some writers have admitted the symptoms as the only sure basis, and others have confined themselves too exclusively to the pathological lesions: the former has been the error of the English, the latter of the French writers. The author of the articles upon this subject in the Library of Medicine, has not followed either classification to the exclusion of the other, but he has inclined rather to the English than to the French system; and if we were restricted to one of these courses we should incline with the author most to that which lays the greatest stress upon the symptoms.

The treatment recommended by the author of the articles is, in general, very sound and unexceptionable: one article, however, is very defective—that relating to delirium tremens: the additions of the American editor will, it is hoped, supply the deficiency. An addition of some length is also made to the chapter of acute hydrocephalus: if any important deficiencies appeared in the rest of the work, they were supplied by a note. But the general character of the articles is such that few alterations seemed necessary.

We extract the article on Delirium Tremens, because it includes some observations on the treatment of this disease, which will, it is believed, be of importance to the American practitioner. Most of our readers are aware that the ordinary treatment of this disease is by the use of opium in large quantities. This method is successful to a certain extent, but requires great care, and there is no doubt that in many complicated cases it is positively injurious: this is particularly the case in complications of delirium tremens with pneumonia, or with cerebral inflammation. After a number of successive trials the opium practice was abandoned entirely in the management of the cases which form the subject of the succeeding remarks, and the disease was treated in all bad cases, and in many slighter ones, by alcoholic stimulants; the result was entirely successful.

In slight cases, or even in those which were moderately severe, this treatment was not always employed; many of the patients whose cases are included in the summary were treated by vegetable emetics, as lobelia and ipecacuanha, or by antispasmodics, as Hoffman's anodyne, and assafœtida. Others were managed by the simple arterial stimulants, such as capsicum, or were left simply to nature, but the alcoholic practice was relied upon in all bad cases which seemed grave from the beginning, or in which other remedies had failed.

The following remarks, which were added by the American editor to the work in question, will more fully explain the results of the treatment:

Delirium tremens is still a common disease in the United States, although the improvement in the habits of the people is gradually rendering it less frequent. The cheapness of spirits, and the comparative pecuniary comfort of our population, place the means of indulgence in intoxicating drinks within the reach of all classes, and render delirium tremens a much more frequent disease than it is in countries where either distilled spirits are difficult to procure, or the habits of the people prevent their indulgence in them. It is for this reason that the disease has attracted so much attention amongst the physicians of this country. In common with others I have been obliged to

make it a subject of investigation, and my position as a medical attendant upon the principal institutions of Philadelphia for a period of nine years, afforded me an extensive field for the study of the disease, and has enabled me to settle some points of practice which have had an important influence on the mortality of the disease.

The distinction generally admitted by writers as to the origin of the disease, is a correct one: there are two distinct modes of origin;—in one, which is the more simple form, the disease begins after complete abstinence from spirits, and in the other the patient continues his habits of intemperance until the disorder breaks out, or until some derangement of an important organ produces an attack of disease which prevents him from indulging longer in his habitual beverage.

1. *Common Delirium Tremens.*—This variety appears a few days, or even the next day, after a fit of drinking, whether it has been carried to the extent of a decided debauch or not, or it may occur in individuals who are simply tipplers, that is, accustomed to drink from two to six or eight glasses of spirits daily, or from a gill to a pint. The patients who are affected with this disorder in private practice, belong for the most part to the latter class, and are taken with the disease when ill health or a surgical injury has suddenly obliged them to give up their habitual stimulants. The attack is generally more mild in those who are accustomed to this less degree of stimulation, than when it directly follows a fit of intemperance.

The disorder is usually divided by authors into three stages, which are not always clearly separated one from another. The distinction is, however, perfectly well founded, and the symptoms of each period are more definite in this disease than in most others. The division is extremely convenient, for the prognosis and treatment of the disorder are extremely different in its several stages, and a disease which is almost always curable at the beginning, becomes in the advanced stage extremely intractable.

(*a*) *First Stage.* This is well known amongst drunkards as the *horrors:* a term which expresses the aspect of the patient, which is that of extreme anxiety and agitation, and the distressing feelings of fear which the patient experiences. This anxious alarming expression, is one of the most characteristic symptoms of the disease, and with the tremor, which is equally remarkable, it constitutes the only pathognomonic character. The tremor extends to the whole muscular system, but as it may be to a certain extent restrained by a voluntary effort of the will, or by supporting the weaker muscles of the limbs against the trunk, it is sometimes not very obvious unless the patient is directed to put out his tongue, or to hold up his hands, where it is at once perceived. The restlessness and tremor are the most frequent and important symptoms of the first stage of the disorder, but are by no means the only ones; the others, however, are only accessary or secondary, and vary with each patient. As a general rule, the pulse is feeble and frequent, the mind is unable to direct itself long to any single subject, and the pupils are slightly contracted. The complexion is extremely variable; it is often pale if the patient has not been long addicted to intemperance, but in the majority of cases it retains the usual tint of the drunkard's countenance. The appetite fails, the bowels are often constipated, and there is generally more or less thirst. In this stage of the complaint, the restlessness continues throughout the night, and of course the patient is unable to sleep: sometimes, the sleeplesness is the first symptom of the disease, but in the majority of cases it attends the restlesness, and is strictly proportioned to it. The agitation may gradually subside and the patient recover, or the disease may pass into the next stage.

(*b*) The *second stage* of the complaint presents the same symptoms as the first, but in an exaggerated degree, the tremors, restlessness, and insomnia are increased, and the appetite is more completely destroyed. The pupils are more contracted; if, however, the patient has not taken opium, the contraction of the pupils is never very great. The distinctive symptom of the second stage, is the illusions which at first occur only at night, when the patient is left alone, and in the dark. These hallucinations are perfectly under the control of the understanding when the courage of the patient is revived by light and society; he is then perfectly aware of their nature, and will often laugh at his own fancies. The illusions are not confined to the night, if this stage become more confirmed, but they still remain perfectly under the control of the will and of the intelligence; if the disease continue, the illusions become more and more frequent, and cease to be recognised by the patient, that is, they are completely confounded with real objects. The attention may still be directed to surrounding objects, and the patient is capable of answering ordinary questions with perfect correctness, if he is addressed in a sharp decided tone of voice, and there is no incoherence in his answers, so long as his attention can be commanded. These illusions are nearly always of an alarming kind, and are as varied in their nature, as the objects which happen to be most familiar to the patient; devils, guns, fire, serpents, and the like, are the most common objects of his fear. At other times he feels a vague dread that his life will be taken, and earnestly entreats that it may be spared. These illusions are so well characterised, that they have always been regarded as the essential character of true delirium tremens; this is nearly, but not absolutely correct, for in some cases the tremors are not attended with illusions, but on the contrary, the mind of the patient is almost clear, and the disease may

prove fatal, although no illusions present themselves, by the occurrence of convulsions or sudden insensibility. Still in the regular simple variety, of which I am now treating, the illusions may be regarded as a constant symptom. The other symptoms of the second stage are not pathognomonic, and, with the exception of the countenance, which retains the same restless expression as in the first stage, are not even characteristic. The pulse is frequent, and generally small, the frequency evidently depends rather upon the extreme agitation of the patient than any regular connection between the state of the circulation and the disease. The appetite rarely returns during this stage, although this is sometimes the case; the tongue is generally furred, but rarely dry. The skin remains moist throughout this stage, and if the efforts of the patient to escape from confinement be constant, or if his agitation be very great, the sweat is often very profuse. This sweat is of a different character from that which generally occurs during the third stage of the disorder, and seems to be strictly dependent upon the constant exercise which the agitation of the patient obliges him to take. The second stage may gradually decline, and the patient fall asleep, and recover; or it may pass into the next stage. Sleep is nothing but the indication of the recovery; it follows rather than precedes the decline of symptoms. The insomnia arises from the extreme nervous disturbance which is the essential element of the disease, and although the fatigue of the patient may be extreme, he is still altogether unable to sleep. Let the nervous agitation be quieted by any means, and sleep will immediately follow, and will finally complete the restoration. This is the true rationale of the close connection between sleep and recovery, which has certainly been misunderstood, and has led to erroneous deductions as to the treatment of the disease. If the disease be completely removed, the patient will sleep for a long time, and will generally awake perfectly restored. In some cases, however, the recovery after prolonged sleep is not complete, but the disease recurs again, and is not completely cured until a day or two afterwards. If the prolonged sleep occur naturally, it is always productive of great relief to the patient, but if it be forced by the operation of narcotics in large doses, instead of conducing to recovery, it will sometimes end fatally, and the patient may then die without awaking. A short sleep of one, two, or three hours is refreshing, but is not usually followed by immediate recovery, although it affords an evidence of the gradual decline of the disease. If delirium tremens be well treated, or if the disease be essentially mild, but few cases pass beyond the second stage; recovery taking place without difficulty.

(c) The *third stage* is attended, like the others, with a symptom which is characteristic; that is, incoherence. The illusions either cease, or they are no longer connected, the patient passing from one object to the other with great rapidity, and not reasoning correctly or connectedly upon the images which are presented to his mind. He becomes feeble, but is, at the same time, extremely agitated, and can only be retained in bed by the constant watchfulness of an attendant, or by straps or bandages. The sweat becomes profuse, the skin sometimes cold, at others warm, and pupils greatly contracted. The contraction sometimes ceases before death, and may be succeeded by a morbid dilatation if there be much serous effusion upon the brain. The senses become gradually more and more obtuse, from the first appearance of incoherence; the patient generally loses his power of attention, and can with great difficulty be induced to direct his attention to surrounding objects, and as the disease advances, he becomes completely comatose, and generally lies in a state of insensibility for some time before death. The pulse gradually fails during this period, and the patient often presents symptoms of nervous disturbance, which are very analagous to those which take place in cases of typhus fever, such as subsultus, spasmodic tremors of the muscles generally, and muttering delirium.

By adopting this division, and basing the distinctive characters of the different stages, upon the mental disturbance which occurs in each of them, a clearer idea may be formed of the character of the disease. If the third stage is reached, the chances of recovery, of course, are extremely small. But the disease will sometimes terminate fatally without going thus far; those cases which I have seen of this sudden termination, were, for the most part, treated by high doses of opium; I have also seen it occur where little or no active remedies had been given, very soon after the entrance of a patient into a hospital, and after the emetic practice. The sudden termination of the disease is not therefore dependent upon any uniform method of practice. These sudden deaths are more frequent in the second variety, when they are generally preceded by convulsions; these, however, sometimes occur in the milder form.

2. The *second variety* of delirium tremens occurs during a debauch, and patients actually intoxicated are often admitted into the Philadelphia hospital, labouring under this disease. The individuals who suffer with this form, are attacked with it after very high stimulation. That is, the stimulation is extremely great, either because the quantity of spirits is very large, or the patient is extremely susceptible of the effects of alcohol. There is in this variety of the disease, a singular union of the directly exciting action of alcohol upon the brain, with the debilitating effects of a diminished stimulation. The apparent contradiction is in many cases easily accounted for; the stomach in these patients is gradually enfeebled and will not receive, or at least retain the accustomed quantity of spirit, and the nervous tremor therefore su-

pervenes: if the stomach becomes again capable of acting upon the alcohol, the tremors are not arrested, although positive intoxication is sometimes brought on. The disorder consists then of two distinct parts; one is the ordinary form of delirium tremens, which is but slightly modified, and the other is the vascular congestion or inflammation which is directly caused by the alcoholic excitement. If there is simply congestion, the face is flushed, and the eyes often injected, but the colour is of a dark and not a bright red tint, the intelligence is dull, and the whole countenance indicates nearly an apoplectic stupidity. These cases are extremely apt to terminate in convulsive fits, which sometimes do not differ from ordinary apoplexy of the simple congestive form, and in other cases resemble an epileptic attack much more closely than apoplexy. If the fits are frequently renewed, the disease will either terminate fatally in the paroxysm, or coma may come on more slowly, and the disorder merely assume the form of the third stage of delirium tremens. When convulsions take place, the ordinary course of the disease is often singularly modified, and its stages greatly shortened. If the excitement be of a more active inflammatory form, the delirium will assume the characters of ordinary meningitis, and the symptoms of the delirium tremens be gradually merged in them; or the reverse may take place, and the inflammatory symptoms abate and be followed by those of this disease. This variety is neither as frequent nor as dangerous as the congestive form. It must not be confounded with true meningitis or cerebritis, which occasionally occurs in drunkards, especially those who have been exposed to the ordinary causes of cerebral inflammation, as blows on the head received during their debauch, or the heat of a summer sun. This mistake can scarcely take place with those who are accustomed to the disease, but it might occur with practitioners who are not familiar with delirium tremens.

Complications.—It is evident, that delirium tremens is a well characterised disease, with its own peculiar symptoms, but it may present numerous complications. These may be either acute or chronic disorders of the viscera. The fevers, properly speaking, rarely complicate delirium tremens, unless they are of the milder forms, such as the ordinary intermittent or remittent, for a severe continued fever comes on gradually, and either prevents the formation of delirium tremens, or it replaces the symptoms by its own peculiar phenomena. The ordinary complications are the vascular congestions or inflammations. These follow the prevailing epidemic constitution of the season, or are caused directly by the action of the alcohol. Thus in summer, dysentery and diarrhœa are extremely frequent, while in winter pneumonia is a common and a very grave complication. In a few cases gangrene of the lungs has occurred during the course of the disease; this was particularly frequent in the winter of 1828—29, when I observed a large number of cases of gangrene at the Philadelphia Hospital. The complications which arise directly from the alcoholic stimulation, are cerebral inflammation or congestions; and gastric disorders, either inflammatory, or the reverse; and various affections of the liver, especially the fatty enlargement. Individuals labouring under phthisis or other chronic diseases, especially hypertrophy of the heart, are sometimes the subjects of delirium tremens. These complications do not in general obscure the symptoms of delirium tremens, except those disorders connected with the brain. The latter occur for the most part in the second form of the disease.

Diagnosis.—The diagnosis of the disease is formed from the previous habits of the patient, as well as his present symptoms, and is in general easy; it becomes difficult only when a cerebral disorder more or less similar to delirium tremens occurs in drunkards. The distinguishing characters are the tremors, the peculiar and changing character of the illusions; the sweats and the restless alarmed countenance. The pulse and the other secondary symptoms of the disease are of little value for the diagnosis. The accidental inflammations are readily distinguished by one who is accustomed carefully to examine the condition of the viscera, otherwise they may often escape notice. This is especially the case with the thoracic inflammations, which are singularly obscure in all cases in which the brain is much disturbed, for the functional signs of these affections then cease or become very slight.

Prognosis.—The prognosis of the disease depends greatly upon the treatment. If it be treated according to the plan which is here presented, it is almost invariably favourable. Should fatal cases occur, they may be ascribed to some unforseen cause, or some accidental complication which is not to be looked for in the ordinary course of the disease. If the disorder be left to itself, mild cases wear themselves out and terminate favourably, although the suffering of the patient is far from inconsiderable; severe cases pass into the advanced stages of the disease, and are apt to terminate fatally. Other methods of treatment modify the prognosis. The disease is, therefore, much more variable in this respect than those disorders which are less amenable to therapeutics.

Anatomical characters.—These are not necessarily connected with those of either congestion or inflammation. The brain may be in either of these states but it is as a purely accidental complication. The most frequent anatomical character is an unusual moistness of the whole brain, serum seems diffused through it, and follows every cut of the scalpel, and is at the same time effused beneath the arachnoid, and contained in undue proportion in the ventricles. Even this appearance I do not regard as necessarily connected with the disease, but I am dis-

posed to refer it, in part at least, to the slow approach of death, and to the laboured condition of both circulation and respiration, which generally precedes it. If this view be correct, the disease must be classed amongst those purely functional disorders of the nervous system which are connected with no regular anatomical lesion; this opinion is confirmed by the history of the symptoms.

Treatment.—Of the various other remedies employed in the treatment of delirium tremens, opiates have probably received the most attention. I formerly used these remedies in almost every case, though not in as large doses as some of my brethren; but when I was a resident physician at the Philadelphia hospital, we were directed to give opium in very large doses—frequently as much as four grains every two or three hours, until sleep was procured. The patients, for the most part, got well under this treatment; but in estimating the value of a particular plan of treatment, we ought to consider the proportional success of this and other plans. A comparison of this sort will prove that opium is not the most effectual remedy in delirium tremens. In conjunction with this remedy, certain hygienic regulations were also enforced at the time to which I have alluded. The patients were locked up in cells, and if very disorderly, that is in every severe case, they were confined in a straight jacket, or retained in bed with gloves and straps.

The practice of the hospital has never been to give opium to the exclusion of other remedies; it was always the custom to use cups and cold applications to the head, purgatives and various other remedies, when they seemed necessary. From time to time a change would be made in the practice, and the affection would either be treated upon empirical grounds, or in accordance with the varying symptoms, or the emetic practice would be pursued.

But the plan of treatment by opiates and confinement is the one that was almost universally practised in Philadelphia several years ago, with variable results. In my own practice I have gradually diminished the quantity of opium which I formerly gave, and for some time past have not used it at all. Instead of it, I have relied upon the stimulant treatment which is followed in some parts of New England, and from time to time has been much resorted to in the Philadelphia hospital; that is, the use of stimulating remedies, particularly alcoholic liquors. These articles I first employed in conjunction with opium, or prescribed them without opiates, in two different conditions; 1st, in the slighter cases, or those of incipient delirium tremens; or, 2dly, in the severe cases where opium had been exhibited but was followed by distress of mind and stupor. But at present I use them singly. This treatment has diminished the mortality of the disease, and rendered it almost always curable. The change which I have adopted in the hygienic rules, has also contributed very decidedly to this result. Instead of confining the patients, I let them walk about and enjoy the company of others as much as they choose: merely taking care that some one should be near them to prevent accidents. I was led to this change by observing that the hallucinations which attend the disorder were more distressing when the patients were in a state of confinement than when they were allowed to walk about as much as they wished. As I have already remarked, they are capable of controlling these hallucinations, until the intellect is entirely powerless; and they can do so the more easily when they are surrounded by objects which may serve to engage their attention. Confinement always irritates them, and increases their ravings, so that the third stage, in which the intellect is completely destroyed, is apt to be brought on more speedily. I have very often tested this by a simple experiment; a man who was confined to his bed by a straight jacket, or something of the kind, I have frequently directed to be dressed, have soothed him by conversation, and after requiring a promise that he would conduct himself with propriety, I have very seldom found reason to be dissatisfied with the result. On the contrary, the disease would almost invariably become milder, and the necessity of confinement cease. It is true that confinement is often necessary at night, from the impossibility of always providing a sufficient number of attendants. I therefore (with the exception just stated) allow the patient to have full liberty, the only restraint being the presence of the keeper: sometimes also I direct them to be set at work, which serves still further to distract their attention.

The proportional mortality under the two plans of treatment which I have detailed, is represented in the following summary, comprising the number of cases treated amongst the men for the space of 5½ years—that is, from the 20th of May, 1834, to the 13th of November, 1839. The whole number of cases admitted for delirium tremens, or intemperance, which was expected to terminate in delirium tremens, was 1241. Of these there were 1198 whites, and only 43 men of colour. Of the whole number, 708 were decided cases of delirium tremens, 60 were slight cases, and 430 cases of mere intemperance. Of the latter, some terminated in decided delirium tremens, and others proved fatal from diseases (such as pneumonia) contracted during the fit of drunkenness, for which they had been sent to the lunatic asylum. So that this class furnishes a considerable number of bad cases. Of the whole number, 121 cases proved fatal; that is, a fraction less than one in ten.

In the first year, from May, 1834, to May, 1835, the number of admissions was 141; of these, 18 died; that is, rather more than one in eight. In the second year the number of cases was 211, the deaths 24, or a little more than

one in nine. The third year, in 301 cases there were 47 deaths, a much larger proportion than in preceding years, one in 6 19-47ths, but depending upon an accidental cause; that is, the occurrence of an epidemic of typhus, which attacked many of the debauched subjects of intemperance: some of them were sent to the lunatic asylum as labouring merely under the effects of intemperance, and could not be afterwards removed to the proper ward.

In the fourth year, beginning May, 1837, of 206 cases, 19 only proved fatal, that is, about one in eleven. This was a decided amelioration, and coincides precisely with the epoch at which the change of practice was introduced.

In the fifth year the mortality went on diminishing, and was less than one in twenty-six; or of 274 cases, 9 only were fatal; and amongst these cases, the mortality was certainly greatest in those which were treated chiefly according to the method formerly pursued at the hospital.

Finally, in the months ending November, 1839, the mortality was only one in 33¾, that is, 4 cases out of 135; and of these four, one entered moribund, and was not, therefore, treated in the hospital; another had inflicted upon himself several fractures and other injuries, by leaping from a third story window, in a fit of delirium tremens, previously to his entrance. The others, it is believed, were also complicated cases.

The preceding summary of the results of the treatment, is extracted from a lecture which I delivered at the Philadelphia Hospital, in December, 1839. The results of the treatment for the last year, up to the present time, (October, 1840,) have been still more satisfactory. The number of cases of the sequelæ of intoxication, and of delirium tremens in the three stages, admitted into the men's wards of the Philadelphia Hospital, from October 12, 1839, to October 12, 1840, is 223. Of these, 61 were classed under the head of intoxication or its immediate sequelæ, some of them passing into delirium tremens. If we exclude the whole of these 61 cases, there remain 162 cases of decided delirium tremens; of these, 87 were admitted in the first stage, 73 in the second, and 2 in the third; 160 cases recovered, and one remained convalescent, who is since well. (Oct. 16.) One only proved fatal: this patient was admitted in the third stage of the disease, and died in a few hours after his entrance; he had been treated with opium, and a box of pills which he was taking were sent to the hospital with him. Of course, this apparent exception confirms the general conclusion, that the disease terminates favourably in every instance, when treated according to the method recommended.

The proof must, therefore, be conclusive if all the circumstances surrounding the patient remain the same. These have remained precisely as they formerly were, with the exception of the difference in the management and treatment of the patients. The superintendant is the same, the resident physicians, in whose immediate charge the patients remain, are of the same average education and experience, and the other circumstances connected with the disease remain unchanged. The inference is, therefore, rigorously deduced, that the former method of treatment yielded an average mortality, which varied but little in different years; while the treatment now pursued, is followed by a mortality which may be regarded as a mere cypher. The single fatal case which has occurred amongst the list of 162 patients admitted, depending on other causes, and the progressive decline of the proportionate mortality keeping pace with the change of the treatment. If, therefore, evidence of this nature be rejected, or if the facts which were not observed by one person alone, but by a large number, or if a practice which was not carried out by a single resident physician, but by a succession of a large number, be rejected as wanting due confirmation, it is very clear, that the common rules of observation, and the conclusions which, under the ordinary circumstances, would be regarded as beyond cavil, must fail when applied to medicine. This, of course, involves a contradiction that few would be willing to admit, at least to avow.

The treatment substituted for the former practice was conducted according to the following general plan:—If a patient entered in a state of intoxication, whether he was labouring under the early symptoms of delirium tremens or not, an emetic was always prescribed; the best for this purpose is either a simple diluent drink, such as chamomile tea, or warm water, or a dose of ipecacuanha. After the operation of the emetic, the patient was generally tranquil for a time, and sometimes fell asleep. On his awaking, the symptoms of delirium tremens presented themselves, if his debauch had been protracted. If it had lasted only for a few days, the disturbance of the nervous system was limited to a slight agitation, or tremors; many such cases occur and terminate in a day or two. If the disease pass into regular delirium tremens, the treatment does not differ from that pursued in those cases, in which the disease is developed previously to the admission of the patient.

The object is then to remove the disorder of the nervous system which follows the excessive use of ardent spirits, by a milder excitement, which may gradually terminate in recovery. For this purpose the best remedy is alcohol, that is, some form of distilled spirits; in our hospital that employed is the cheaper kind of brandy. Of this, an ounce may be given every three or four hours, if the case be a slight one; if the tremors are more severe, or if the disease is advanced to the second stage, two ounces should be given every four hours, or one ounce once in every two hours. It is very

rarely necessary to exceed this quantity in cases which are brought under treatment during the first, or early in the second stage. There are some cases which require, for a short time, larger doses: there are those in which the disease is either of itself more severe, or in which the patient has been in the habit of using enormous quantities of alcoholic stimulus. It is then often necessary to administer the brandy in doses of two ounces every two hours, but these doses are rarely required for more than a single day. In a few cases where the depression is extreme, it becomes necessary to increase the dose even beyond this amount. In two instances at least, the quantity was not less than two ounces every hour for three or four doses; these were, however, extreme cases, of a class which I have never known to recover under ordinary methods of treatment.

The rationale of this practice is evident enough; the excessive stimulation to which these patients have been long subjected is not only followed by a subsequent depression, but is attended with an extreme disorder of the nervous system, which constitutes the essential character of the disease. The stimulating practice relieves this irritability for a time by substituting its own peculiar action, and when administered in these doses, which are never sufficient to intoxicate, the subsequent depression may be completely avoided. Of course, no practitioner who feels a proper regard for his patient, or for his own character, would allow the patient or his friends to increase the quantity of alcoholic stimulants to such a degree as to run the slightest risk of producing these intoxicating effects. The quantity must vary according to the susceptibility of the patient; if this has been nearly destroyed by excesses, the quantity of alcohol which is necessary to produce a given effect must of course be greater than in those cases, in which it is still but little impaired. The dose should always be as small as possible, for if the quantity necessary to tranquilise the patient be exceeded, it acts as an irritant, and produces injurious consequences.

I am perfectly aware that the alcoholic stimulants are not absolutely necessary for the majority of cases of delirium tremens; a variety of methods will cure the disease, or it will in the greater number of cases get well of itself, like all diseases which have a self-limited duration. I wish merely to state what is incontestibly proved by the documents, that the stimulant practice offers a successful result, which may be looked for with a certainty which is almost absolute, and that this method of treatment has the advantage of being applicable to the worst cases; in the milder ones the only question is, whether it unites the advantages of curing the patient "safely, quickly, and agreeably;" of this no one who has witnessed the horrible sufferings of the patients who labour under delirium tremens, and their speedy alleviation by this treatment, can entertain a doubt. The difficulty which will arise in the minds of many, is of a different kind: many physicians will hesitate on moral considerations, from a dread of either seeming to give countenance to the habit of spirit drinking, or from a dislike to administer a poison which has itself caused the disease. This for a long time caused me to use this mode of treatment with extreme reluctance, and to restrict its employment to those cases in which it seemed indispensably necessary, but the results were so incontestible, and the diminution of the mortality so evident that I could not avoid adopting a method which has hitherto insured the safety of the patient, under circumstances in which it would otherwise have been placed in extreme hazard. If the probability of a recurrence of the disease were increased, it would still be a matter of doubt whether a physician should hesitate; but there is no reason for believing that there is an increased danger of a relapse. At least the examination of the register of the hospital proves that such is not the case. If the patient return to his former associates before the disease is completely passed, that is, before the restlessness is removed, a relapse into habits of intemperance is almost immediate; but if all remains of the disease be completely removed, the remembrance of the attack and its accompanying horrors, will in general preserve the patient, for a time, from a renewal of his vicious habits. A complete abandonment of them is unfortunately not common, and is scarcely practicable without an entire abstinence from intoxicating drinks.

Although the treatment of the disease by alcoholic stimulants is so universally successful, something more is required to insure their favourable results; that is, a judicious management of the complications which are so frequent in the disorder. Their treatment in general does not interfere with that of the delirium tremens, for in drunkards the constant habit of stimulation renders the system almost insensible to ordinary excitants. If the complication be inflammatory, venesection is occasionally advisable, but free local depletion by cupping, and the application of counter-irritants are absolutely necessary. This is particularly the case with the inflammations of the thorax and brain; if the latter organ be attacked, revulsive foot baths and cold applications to the head should be constantly kept up. Although an active congestion of the brain, which requires these antiphlogistic means, does not constitute an insuperable objection to the use of stimulants, these remedies should always be given in the least possible dose, and be immediately discontinued if the symptoms of the delirium tremens abate. If there is gastritis, ice and iced water should be given, and the stimulant discontinued as soon as possible. Many of our cases were of this complicated kind, but the mortality was not increased by them. Still the

gravity of the prognosis is much increased, and they must occasionally prove fatal.

In recommending the stimulant treatment as on the whole the safest, especially in cases which cannot be carefully watched, I do not mean to assert that other methods of treatment will not be equally successful with extraordinary care, but I am fully convinced that no method is so safe and so practicable both in severe and in slight cases, especially if they cannot receive more than the ordinary attention which a physician in large practice can give them. But a physician, who is convinced of the propriety of the course, may leave a mild case to itself with the certainty that it will wear itself out, or he may adopt some other form of practice. Of these, the two which are most used in this city are the methods by opiates and by emetics.

As to the former, notwithstanding the predilection I once had for it, I would restrict the use of opiates to two different circumstances; one is the cases of delirium tremens which follow surgical accidents, in which the attack is often slight, but where rest is essential. In these cases I would at present give opium with stimulants, either the anti-spasmodics or the alcoholic stimulants. But the opium should be given in moderate doses, as thirty or forty drops of laudanum, repeated at intervals of two, three, or four hours. There is another case in which opium is useful, though I have not found it strictly necessary; that is, at the close of the disease, when the symptoms have subsided, either naturally or by the aid of treatment, but the patient remains restless and sleeps badly; a single dose of 10 or 12 grains of Dover's powder, or 25 or 30 drops of laudanum, given at night, will then often hasten the recovery. There are also times during the course of the disease in which the patient is disposed to sleep, but composes himself with difficulty, in which the same treatment will produce good effects. I do not object to opium given in this way to assist nature, I object only to relying upon it as the remedy by which sleep may be forced, to use a common expression.

The emetic treatment is in like manner often a successful one, and in the milder cases of the disease which occur after a forced abstinence from the habitual use of spirits, it is found to be successful. It was much relied upon by Dr. Klapp of this city, who contributed greatly to its introduction. The explanation which I give of the action of emetics, differs from that admitted by Dr. Klapp, who supposes that they act chiefly upon the stomach. It is their general, not their local action, which seems to me the most beneficial; the languor and relaxation which follows vomiting, calms the nervous agitation and disposes to a healthful sleep. If the vegetable emetics be prescribed, there is little danger following their use; but in patients who have had the facilities of indulging freely in large quantities of ardent spirits, that is, the drunkards belonging to those classes of society who are in comparatively easy circumstances, these remedies are attended with danger, and I have not found, as a general rule, that they are equally certain of producing a speedy cure as the stimulant practice.

In recommending alcoholic stimulants as the most certain remedy, I do not exclude anti-spasmodics and the different stimulants. These may be substituted in many cases for the former remedies, or they may be given in combination with them. The best are Hoffman's anodyne, assafœtida either in milk or tincture, capsicum and valerian. The simple infusion of valerian is an excellent calmant in these cases. Capsicum is best fitted to those cases in which there is much nausea with a sensation of sinking at the stomach, while there are few or no evidences of inflammation. It may be given in pills of one or two grains repeated every two hours, or in a larger quantity if the article be of feeble strength. Tonics are also of great benefit in many stages of the disease.

In the treatment which I have recommended, I am aware that I do not agree with some of my professional brethren, for whom I entertain the highest respect. In common with them I had my own repugnance for it to overcome; but the evidence of its effects has been of a nature, which I could not refuse to admit. I lay no claim, of course, to originality in advising a method which has been long used, other than what results from settling its value upon a more definite basis than has yet been done. It is possible that other methods may prove equally successful; for the disease tends to a natural recovery, and this termination may be favoured in many ways, but the results which I have given for the past year are upon so large a scale, that they clearly prove that no method can yield a more successful result.

FOREIGN.

On Secondary Depots of Matter. How are Purulent Depositions of Matter formed after Injuries and Operations in parts remote from the original seat of Injury? Illustrated by numerous Cases, &c. By JOHN CHARLES HALL, M. D. F. L. S.

"Utendum est ætate; cito pede præterit ætas."
OVID.

William T——n, ætat. 35, a man of very intemperate habits, was placed under the care of a surgeon, having, four hours previously, received a kick from a horse on the posterior part of the head. There was a wound, two inches in length, which separated the scalp from the cranium, the bone being denuded of its periosteum to the extent of a crown piece. There was no appearance of fracture or depression. He stated that he was stunned by the blow for some time, but had not been sick. When first seen he was stupid and sleepy; pulse one hundred, strong and full.

Eighteen ounces of blood were taken away from the arm, and a purgative, composed of calomel and colocynth, administered.

6th, (noon.)—Has passed a tolerably good night; not at all drowsy. Complains of a little pain in the head; bowels have acted freely; tongue slightly furred, but moist; pulse hard, and eighty-four; countenance flushed and anxious; skin hard and dry.

9, P. M.—Pain in the head increased. There is a slight puffiness about the edges of the wound; pulse eighty-six, hard and wiry; bled again to ten ounces.

7th.—The blood extracted yesterday was highly inflamed. Has passed a quiet night; no pain in the head; still drowsy and inclined to sleep; pulse eighty four, more quiet; tongue moist; *the adhesions were broken up, and a considerable quantity of serum escaped.* Apply a poultice to the wound.

15th.—No particular change since our last report. Is now going on well; wound nearly healed. Wants to go home; and says there is nothing the matter with him.

16th.—No change.

17th.—Pain in the head to-day, relieved by purgatives.

23d.—Appears to be going on well; the bone, however, is denuded and rough.

26th.—Up to this day he remained quite well, and was allowed to walk about his room. Violent pain in the head now came on; singing in the ears; with repeated rigors alternating with the most violent perspirations.

10, A. M.—Severe pain in the head; face much flushed; skin hot; tongue loaded; pulse one hundred and twenty, full and sharp. Bled to twelve ounces.

3, P. M.—Pain in the head better; pulse ninety; blood taken away in the morning buffed. An incision was made down to the bone, which was exposed by the accident; it felt rough, but the periosteum was spreading over it; a saline mixture was ordered. In the evening he had another rigor; pulse one hundred and twenty, strong but compressible; blood buffed and cupped; a blister to the head. The medicine to be omitted.

℞. Hydrarg. Chloridi, gr. ii. quâque 4ta. horâ sumend.

27th.—Has passed a very restless night. Had two rigors; one at evening, and the other in the morning: pain in the head; pulse one hundred and thirty-two; cough; no râle, no tenderness of the abdomen; tongue white and loaded; skin hot and dry; slight delirium.

2 o'clock, P. M.—The trephine was applied over the original seat of injury to seek for pus, but none was found; the dura mater was perfectly sound, and not one drop of matter escaped; the wound was closed by suture. Vespere, pulse seventy-two, quiet; no pain in the head, or, to use the poor fellow's own words, "none worth speaking of."

28th.—Has been rather restless during the night. Had a rigor at midnight, another at twelve to-day; slight pain in the head; great intolerance of light and sound: singing in the ears; wound looks rather better; pulse one hundred and twenty, strong and sharp; tongue moist but loaded, particularly at the back part. Bled to eight ounces. Two grains of calomel every eight hours.

29th.—Blood buffed; pain in the head said to be relieved (?) by the bleeding: two rigors at the same time as yesterday: the wound does not look so well to-day; he is less irritable; pulse one hundred and twenty. Continue the calomel.

30th.—Has had a little sleep at intervals during the night; two more rigors; great sickness; pain, with some fulness, in the right hypochondriac and epigastric region, which is increased by pressure; breathing hurried; the wound appears worse; no pain in the head, and no cough; pulse one hundred and twenty; fæces black, fœtid, and particularly offensive; countenance sallow. Omit the calomel; a blister to the epigastrium. Small doses of creosote, to allay the vomiting; and a few grains of sesqui-carbonate of ammonia, with spir. æth. nit. and mint-water, every four hours.

1st.—Two more rigors; no sleep; pain in the loins; pulse one hundred and eight; urine scanty, and high coloured; tongue loaded; skin hot and dry; complains of pain between the shoulders. Beef-tea; two grains of calomel at bed time.

2d.—Has passed a very restless night; had another rigor this morning; breathing occasionally difficult; evidently becoming weaker; the skin, also, is becoming daily more and more yellow; wound unhealthy and languid; pulse one hundred and sixteen.

7th.—The changes that daily took place up to this morning, when he died, require no particular notice; he became weaker and weaker, the symptoms of jaundice gradually increasing.

Post-mortem examination.—Head. Upon removing the bone, the dura mater was found to be perfeetly free from disease; the longitudinal sinus, over which the trephine had been applied, was healthy, as were all the other sinuses, evincing no trace of previous inflammation. The brain was also perfectly free from disease, nor was there any effusion into the ventricles.

The lungs were congested, and of a dark red colour, with one or two depôts upon each lobe about the size of peas. The liver was much enlarged, the right lobe reaching down below the crest of the ilium. There was a large purulent deposit at the anterior margin, extending for some distance along the inferior concave surface of this lobe; there were also two or three smaller ones on the superior aspect. On cutting through the surface of this lobe, other deposits of different sizes were dis-

covered, being hollow in the centre, and filled with pus; there was also a very considerable abscess in the left lobe. The right shoulder-joint was also affected, and contained a considerable quantity of pus.

We cannot carefully read over this very important and very interesting case without remarking, that, after a comparatively slight injury of the head, a distant organ became secondarily affected, abscesses forming in the liver. A more minute examination will also point out how clearly the condition of the wound proclaimed the disordered condition of the system. Cases of this kind are far from uncommon; and, speaking of them, Mr. Abernethy remarks, "that these circumstances appear to me to be stated rather as occasional, than as occurrences which are common, and naturally to be looked for and expected; and I therefore think myself warranted in supposing that they have not made a sufficient impression on the minds of surgeons in this country at least." Dr. Cheston, in his valuable pathological observations, has recorded several cases of this nature, and we may also add that they have been familiar to surgeons for many years. In the works of Galen we find passages proving him to have been accquainted with them. Bertrandi (*Mémoires de l'Académie de Chirurgie*) mentions several instances in which secondary depôts took place in the liver after injuries of the head.

The subject of secondary depositions of matter taking place, as in the case now before us, in organs far distant from the original seat of the injury, involved, as it is, in mystery, is nevertheless, one of considerable importance, and well worthy of our most careful and attentive consideration. That this is far from being uncommon, after injuries and operations, is a fact that cannot be doubted for a moment. A man is brought into the hands of the surgion, having recieved a blow upon the back part of his head; he recovers from the injury; all pain in the head is gone; he walks about the room, and expresses a wish to return home; suddenly he is seized with pain in the head, succeeded by rigors; there is pain in the right hypochondriac region; the countenance becomes yellow, the symptoms of jaundice daily increase, the man dies, and the lungs, liver, and one or two joints, are found to contain depôts of purulent matter. The question naturally arising is, how came they there? In the greater number of cases they succeed to injuries and operations, frequently after a blow upon the head. Now as they appear, in a majority of instances after accidents, in men who, before the infliction of the injury, were in a perfect state of health, we cannot for a moment suppose that they existed previous to the accident. Such a supposition is not consonant with reason. We cannot suppose such an extensive disease to have existed without disordering the health—without proclaiming its presence by a series of the most alarming symptoms. The disease, therefore, must be created after the accident; the fracture of the bone, or the wound of the scalp covering it, or the inflammatory action produced in one, or both, must have contributed to its production; in what way, however, must form the ground-work of our present investigation.

We define suppuration to be a peculiar process, by which a fluid called pus is formed in the substance or from the surface of parts of the body. The texture in which suppuration seems to be most readily produced by a certain degree of inflammatory action is mucous membrane, whether this lines excretory ducts or canals, or covers the inner surfaces of the respiratory or urinary organs.

Professor Carswell makes a distinction between the process of suppuration, considered as a vital act, and the mere presence of pus as a product of that process. "For if," says he, "pus be found in an organ in which neither the physical nor physiological characters of inflammation are to be detected, either during life or after death, the necessity then of establishing a distinction between the mere presence of pus and suppuration must be obvious." Great violence done to parts is one of the principal exciting causes of suppuration; but simple violence does not always occasion it; "for," remarks John Hunter, "the violence must be followed by something that prevents the cure in a more simple way—something that prevents the restoration of the structure, and the continuance of the animal functions of the part. The parts must be kept long enough in that state into which they were put by the violence, or, what is somewhat similar to this, the violence must be attended with death in a part, as in many bruises, all mortifications, and all sloughs in consequence of the application of caustic which, when the dead parts separate, leave internal surfaces exposed. "And," continues Professor Carswell, in his Illustrations of the elementary Forms of Disease, "formed by a process similar to that of secretion, the chemical composition of pus must vary, not only from the nature of the tissue from which it is derived, but likewise under the influence of various morbid conditions which are known to modify the products of secretions in general." "True pus," says Sir A. Cooper, "has certain properties which, when taken singly, may belong to all other secretions, but which conjointly form the true characteristics of this fluid, viz., globules swimming in a fluid which is coagulable by a solution of the hydrochlorate of ammonia. Pus also contains a very considerable portion of fibrine: thus we find fibrine, serum, and globules, entering into its formation. If I were to hazard a theory upon this subject, I should say that pus was composed of the constituent parts of the blood, slightly changed in their nature by inflammation." (Lectures on Surgery, page 121.)

In addition to what we have already stated,

we learn also that the secretion of pus is frequently suspended by disease: thus in fevers the peculiar state of the constitution induced by them has such an effect upon the local affection that a sore will appear to be almost dried up, at any rate its discharge will be very considerably lessened, but as soon as the febrile symptoms subside, pus is again secreted in as large a quantity as ever. The nature of the secretion is also altered by disease, and the appearance of the wound will announce the commencement of constitutional irritation, even before any other symptom is present: the production of true pus ceases when disease attacks either the constitution or the sore; it changes its character, and becomes offensive, thin, and more transparent, containing a greater proportion of the extraneous particles of the blood.

The nature of the fluid most unquestionably varies; varies not only in its nature, but also in its effects. I know of no chemical difference between the pus upon the surface of a common ulcer and that of small-pox; that there is a difference, I presume no one will take upon himself to doubt; but we only are aware of such difference by the nature of the effects produced in each particular form in which suppuration takes place upon the constitution. Doubtless, whatever tends to produce an alteration in the general state of the system influences more or less the nature of this fluid; at any rate renders the human body more susceptible of its influence—more liable to be acted upon by it. If, then, we can discover, by chemical analysis, no essential difference in the constituent parts of this fluid, I am inclined to think that peculiarities in the constitution, or in the nature of the parts in which it is secreted, will account for the varieties we observe in the nature of this fluid. For my own part I have again and again examined gonorrhœal discharges with a microscope, and at the same time pus effused from an ulcer, without being able to detect any difference. Long ago, however, Mr. Howship informed us, that "he could not perceive any essential difference between such discharge and the pus collected from an ulcer." Now every surgeon is well aware that irritation, chemical or mechanical, on the surfaces of the female pudenda, or urethra of the male, which are the seats of gonorrhœa, may excite it. Contusion and forcible distension of the female pudenda will also bring on a discharge, When female children of tender years have been violated, we have always more or less discharge; the introduction of a bougie; the injection of any irritating fluid; connection with women during the period of the menses, or who have a leucorrhœal discharge, will produce more or less inflammation of the urethra, and an acrid secretion that any surgeon would at once pronounce to be gonorrhœa—which is, in fact, a disease of a highly inflammatory character, ending in the secretion and discharge of muco-purulent matter, varying, of course, in different constitutions, and influenced more or less by the general state of the system; capable of being produced in a variety of ways, always, however, commencing with an attack of inflammation, and ending in the discharge of pus—of matter which no one can distinguish from that which is secreted from an ulcer. There is nothing, then, in the nature of this fluid to induce us to suppose that the disease is specific, or that it is even a form of the venereal disease.

We ventured to suggest, at the commencement of this paper, that the proof of the enjoyment of good health before the reception of a blow upon the head, was presumptive evidence of the previous non-existence of the purulent deposits found in the liver after such injuries. In the valuable lectures (now publishing in this journal) of Mr. Phillips, on Surgery, this subject is discussed with considerable ability. "It is difficult," says he, "to explain visceral abscesses as a consequence of surgical operations, though operations are often performed on persons whose general health is good, and in whom we cannot admit that visceral lesions, so grave as those we meet with, can have existed before the injury or operation. Still, as on the one hand observation shows that a great many organic lesions may exist in a latent state, and as, on the other hand, visceral abscesses, consequences of wounds, present, by their multiplicity, their seat, and other circumstances, a great analogy with suppurating tubercles, many persons have maintained that these abscesses were no other than the result of the development of pre-existing tubercles. If this theory ought not to be adopted as a general rule, neither should it be repulsed in all cases. Our opinion is that it should not be admitted as a general rule; unquestionably, in most cases, around these abscesses, phlegmonous inflammation may be detected without tubercles, or tubercular infiltration."

This opinion is doubtless entitled to great respect, admitting, however, of much that can be urged against as well as in favour of its adoption. It appears clear, that to the production of such secondary depôts two things are necessary: first, some exciting cause, as a wound of the scalp or an injury of the cranium; second, a peculiar state of the constitution, either existing previous to the receipt of the injury or produced by some change which takes place in the part itself; for, doubtless, the general state of the system contributes in no inconsiderable degree to the production of certain specific diseases. Thus, a child may escape at one period of the year from rubeola, or any other disease to which children are liable, but at another time, from the strength being exhausted, from a cachetic state of the body, no resistance can be offered by the constitution, and the disease comes on.

Admitting, then, on the one hand, the necessity of an immediate local or exciting cause,

which we discover in the wound or blow upon the head, we direct our attention to that state of the system that predisposes to it; to that peculiar condition of the circumstances by which the patient is surrounded: it appears clear, we think, that certain conditions of the atmosphere, or of particular districts—in short, those which contribute to give rise to those fearful maladies, hospital gangrene and typhus fever—tend to produce inflammation of the veins; for I have never seen a case of phlebitis in which typhoid symptoms were not present. We will now enter more fully into the examination of phlebitis, and consider in review what has been written on the subject of inflammation of the veins, and the origin of depôts of purulent matter in certain viscera, at the same time offering such remarks as the cases we have seen, and the post-mortem examinations we have attended, suggest. We will therefore examine, in the first place, the causes of phlebitis; secondly, the symptoms that are present; and lastly, the manner in which the visceral abscesses before alluded to are supposed to be formed, after injuries and operations.

1st. The causes of phlebitis.

In the Cyclopædia of Practical Medicine there is a very interesting paper by Dr. Robert Lee, F. R. S., on diseases of the veins. He there states that he was informed by Sir A. Cooper that he once met with a tumour upon the saphena major vein. This tumour was laid open or removed, and inflammation of the vein soon succeeded, and destroyed life. A lady having a varicose enlargement of the vena saphena, Sir Astley cut it out, compressing the vein below, and requested her to keep quiet. Three or four days afterwards she was labouring under high constitutional irritation, the leg having an erysipelatous appearance; the great saphena vein became inflamed as high as the groin, and the patient died. Mr. Oldknow relates the case of a man who died after the application of a ligature to a varicose saphena vein. A woman was operated upon by Sir E. Home for femoral aneurism; by accident the vein was wounded, and the woman died. "Mr. Abernethy proposed to cut the saphena vein in cases of varicose veins of the leg; proposed, I say, for I believe he never did it; but," continued the learned lecturer, "when I was assistant-surgeon to this hospital, I cut this vein in a poor fellow's leg, and he died of venous inflammation; but still the operation had been performed before with perfect safety." (Notes of Sir B. C. Brodie's Clinical Lectures.)

Inflammation of the veins appears to arise, therefore, for the most part, from direct injury of them; from small punctures, as in bleeding. Mr. Abernethy believed that moving the arm soon after bleeding, produced the disease. Dr. J. Thompson, of Edinburgh, thinks that the state of the lancet as to sharpness has a considerable share in producing the morbid effects. A bad lancet may contribute, Mr. Abernethy thinks, to produce the disease; yet this is not sufficient to account for the accident, without supposing a peculiar irritability of the constitution to be present, and this opinion is borne out by Sir B. C. Brodie, who remarks, "you bleed three hundred patients, and at length one is attacked with inflammation of the veins, and you are at once accused of having a foul lancet, when perhaps it was new, and used only for the first time." Breschet states that punctured wounds, particularly when the instrument is charged with some putrid or irritating matter, are often followed by inflammation of the deep-seated veins, and he attributes the greater frequency of inflammation of the veins of the arm in the present day, to the fact of bleeding with the lancet used for vaccination. We may also mention wounds received in dissection as an exciting cause of inflammation of the veins, and it is reported that Dr. Serrin died from the prick of a pin, which had been used for dressing a blister, and which wound, slight as it was, induced fatal inflammation of the vein. We must also take into consideration the state of our patient at the time he is bled. We must remember that there is more or less of excitement; generally more or less a tendency in the animal body to take on an inflammatory action at the time the operation is performed.

2d. The symptoms of phlebitis.

We are indebted to Mr. Arnott for some very clear explanations of the phenomena attendant upon this disease. The symptoms, he says, manifest themselves in from two to twelve days: "great restlessness and anxiety, depression of spirits, and prostration of strength; sense of weight at the præcordia; frequent sighing, or rather moaning. The common symptoms of fever are present; the pulse is rapid, reaching one hundred and thirty to one hundred and forty in a minute, but is in other respects extremely variable. Under symptoms of increasing debility, and at a time when the local symptoms appear to be subsiding, secondary inflammations of a violent character, and quickly terminating in effusions of pus or lymph, take place in situations remote from the original injury; the cellular substance, the joints, and the eye, have been affected. Death is always preceded by symptoms of extreme exhaustion, such as those of a rapid feeble pulse; dry, brown, or black tongue; teeth and lips covered with sordes; haggard countenance; low delirium."

M. Cruveilhier, whose writings we shall directly more particularly examine, informs us that phlebitis of the bones is one of the most frequent causes of abscesses found in the liver and other viscera. In 1814, he examined the medullary membrane of the long bones of such as had died in the Hôtel-Dieu with abscesses of the viscera, and low typhoid symptoms. There was suppuration in by far the greater number of those of the medullary membrane, sometimes extending throughout the whole

length of the bone. Operations upon the bones are extremely likely to produce inflammation of the veins, according to this author; and he refers the constitutional disturbance to a miasmatic state of the system, the whole mass of fluids being injected: and he continues, "however extensive the phlebitis may be, if the pus does not enter the circulation, no accident follows from it; but as soon as the impediment formed by the coagula is removed, atonic adynamic fever, preceded by intense shivering, takes place, and is speedily followed by death."

It appears, then, that the veins are liable to all the morbid changes which are common to the soft parts in general, and that the membrane by which they are lined is peculiarly susceptible of inflammation. This inflammation may be general or local; it may be confined to the vein where the injury was first received; it may spread along the lining membrane to the principal venous trunk; and, in some instances, to the membrane lining the cavity of the heart. Sometimes this inflammation ends in the pouring out of coagulating lymph, by which the vein becomes obliterated; becomes a mere knotty cord. This frequently occurs in horses; in fact, the first case of phlebitis I ever saw was in the jugular vein of a horse of my own, which ended in the loss of the vessel on that part of the neck. When this inflammation is not very acute, it differs little from attacks of a similar nature in any other part of the body. "When," says Mr. Cooper, of University College Hospital, "the secretion of pus is in consequence of inflammation of the membranes lining a vein, the pus is either mixed with the circulating blood, or the inflammation having produced adhesion of the sides of the vessel, at certain intervals boundaries are formed to the collections of the pus, which in this manner form a chain of abscesses in the course of the vessel."

The appearances, then, will vary in our examinations after death, depending as they do upon the length of time the disease has existed. 1st, It may destroy life in five or six days, before pus has formed, although in many cases it is thrown out much sooner. The inner covering then is red and vascular. 2dly, We may have the vein full of coagulated lymph. 3dly, Pus may have been formed in considerable quantities. Now all these effects may be local or general; may be confined to the particular vein injured, or extend along the venous trunks. 4th, We find depôts of matter in the lungs, liver, joints, in parts far distant from the original seat of injury.

3d. How such secondary depôts are formed?

We have endeavoured to divide inflammation of the veins into two stages; to prove that the formation of adherent coagulum is the first, and of pus the second period of this disease. The investigations of surgeons also prove to us that the conversion of the first into the second stage of the malady, is frequently produced by irritating parts in a state of active inflammation, by endeavouring at short intervals to extract dead bone, balls, or other foreign bodies; by cramming up an inflamed wound, as in the operation for fistula *in ano*, after the fashion of a portion of the French school; the frequent examination of wounds; the breaking down of newly formed adhesions, by the introduction of a probe or finger. I have twice seen fatal results brought on by this meddlesome surgery, by a system worthy the strongest censure. In his Surgical Dictionary, Mr. Cooper has at great length examined the subject we are endeavouring to discuss; and he reminds us of the important fact that the first effect of every phlebitis is the coagulation of the blood, which becomes adherent to the inner coat of the vessel; such coagulations take place both in spontaneous and traumatic inflammation of the veins. In consequence of the interruption to the current of the blood in the inflamed vein, it becomes stagnant, and effusion of serum takes place in the surrounding parts, unless the other veins are capable of carrying on the circulation. With respect to the local changes attending the suppuration of the veins, the first is the deposition of pus, and M. Cruveilhier observes that this takes place "not between the vein and the clot, but in the very centre of the latter. At first it has the appearance of wine lees, and then it becomes white and opaque. This presence of pus in the centre of clots of blood has led to the idea that these clots are directly organized, and capable both of inflammation and suppuration, in the same manner as it is admitted that the pus or serum, which in pleuritic effusion is circumscribed on every side by a recently formed false membrane, is the product of an exhalation from this membrane itself." But it seems, contends Mr. Cooper, more rational to suppose that the coagulum in phlebitis, and the false membrane in pleurisies, serve, in some measure, as filters, through which the products pass, which are secreted by the internal membrane of the vein, or by the pleura. The presence of pus, then, in the centre of a coagulum, would appear, according to my view, to be a phenomenon of the capillary system.

Case II.—W. ——, æt. 23, was admitted for a simple fracture of the femur, and a slight wound of the scalp. The wound in the scalp became puffy in several places, into which free incisions were made. Typhoid symptoms came on; the skin became yellow, as in the last case, and the man died. Upon an examination of the body the two ends of the broken bones were found bathed in pus; there was also an abscess in the liver.

Case III.—For some cause or other, (which I do not at this moment remember,) a surgeon applied caustic to the scalp of a gentleman who was his patient, which formed a very large slough. Suddenly he was attacked with a set

of very odd symptoms; the abdomen becoming very much enlarged, and he died. Sir B. Brodie opened the body, and found the intestines glued together with lymph. The bone of the head, over which the slough had been made, was inflamed and highly vascular, and the dura mater separated from the bone.

Case IV.—A girl was admitted with an extensive wound of the pericranium, by which the bone was denuded. Typhoid symptoms came on, and the girl died. The local appearances were similar to those observed in the last case; the bone being vascular, and the dura mater detached: there was also a very large abscess in the liver.

Case V.—A young woman died after a very severe injury of the head. The dura mater was here also found detached, and a large abscess encircling a simple fracture of the thigh.

We have now fully traced the effects produced by those injuries—have proved such injuries to be the exciting causes of the various purulent depôts discovered in parts far distant. But we call in vain to our assistance the aid of anatomy to draw aside the veil that conceals these phenomena. The peculiar construction of our textures, which our forefathers concluded allowed the fluids to wander from one part of the body to the other, as through a sponge—in one word, the whole system of organism—is incapable of accounting for so extraordinary a circumstance.

An inflammation which seemed to have nothing to do with that now under consideration (phlebitis) has filled up the great void that seemed to separate the suppurating wound from a visceral abscess: a series of experiments appear to have clearly established this proposition,—that every foreign body introduced into the veins in the living subject occasions, when its discharge by the emunctories is impossible, visceral abscesses completely resembling those consequent to wounds and surgical operations, and such abscesses are the result of capillary phlebitis in these same viscera. (Translated from *Nouv. Bibl. Med.*)

The experiments of Cruveilhier are certainly very clever, and tend to throw some light upon the subject under examination. That we may rely upon them I have no doubt; for having taken the trouble to make some of them myself, I found what this gentleman has stated to be perfectly correct. I did not certainly try all of them, and for two reasons; first, because I had not sufficient time to devote to them; and secondly, I wished not, for the purpose of idle curiosity, to put numerous dogs to the most fearful torture. When any practical end can be gained by such means, we have an undoubted right to seize upon every source whence information can be drawn; but the truth of such experiments having been confirmed, it is wanton cruelty to torture poor brutes for no good purpose, nor can such deeds be too strenuously condemned.

We shall now conclude this part of our examinations, by recording a few of the experiments to which we have alluded, and making such comments as they seem to demand. It is a question of some interest whether suppuration ever takes place without the existence of previous inflammation, and Cruveilhier contends that this can never be the case; but collections which he describes as extraneous matter may form in various parts of the body without such parts having been attacked by inflammation. Dr. Thompson doubts, however, "whether these collections of matter ever form without inflammation, and is inclined to believe that in whatever texture or part of the body scrofula manifests itself, these inflammations will be found to exist. The phenomena of inflammation, both local and general, are, it is true, modified by the existence of the scrofulous diathesis; but they are, I believe, always present in such a degree as to justify us in giving to them the name of inflammation, and in classing most, if not all local scrofulous affections, among inflammatory diseases."—*Thompson on Inflammation.*

John Hunter observed, that pus does not irritate the peculiar surface by which it is produced, although it may be highly exciting to any other, and, therefore, that no suppurating surface of any specific kind can be kept up by its own discharge, for if this were the case, any sore secreting an acrid and irritable fluid would be kept open by its discharge, and would never be induced to heal; and this may also be said of many other fluids: thus the bile, the urine, and the tears, do not excite the particular parts, the glands or ducts by which they are secreted, and yet they are nevertheless capable of irritating any other part of the human frame. From this I think, then, that we may very justly draw the conclusion that when pus once enters a vein, once mingles with the circulating blood, whatever may have been its previous nature, whatever effect it may have produced upon the part where it was created, it now either has changed its condition, or, acting as a foreign body, becomes highly irritating to the particular parts to which it is applied.

"If," says M. Cruveilhier, "any irritating fluid is thrown into the femoral vein of a dog in the direction of the heart, (which can be accomplished after a few of the valves are broken down,) and the collateral veins do not convey the liquid into the circulation, the injection proves immediately fatal; the limb in thirty-six hours becomes swollen; and if the animal then dies, or is killed immediately, bloody extravasations are found in the substance of the muscles, and in the cellular tissue of the limb. The large veins are distended with adherent and coagulated lymph or blood, and the small veins corresponding to the extravasations are also full of concrete blood, while those appertaining

to the healthy parts are free. If the animal survives the experiment, collections of pus replace those of blood, at the same time that pus is substituted for the coagulated blood in the veins."

This physiologist next devoted his attention to endeavour to find out what became of the pus in local inflammation of the veins, when such fluids became mingled with the blood. When, however, it was so blended, it was difficult to discover its presence, and therefore quicksilver was employed.

"If a large quantity of quicksilver be injected into the femoral or jugular vein, the animal will become exceedingly depressed, and perish in from twelve to twenty-four hours, in a state very analogous to that observed in chronic catarrh. The whole of the mercury will be found again in the lungs, which will not be inflamed, but gorged with serosity that may be pressed out of them. But if the quantity of quicksilver be smaller, the animal will survive the experiment for a longer period, and then there will be perceived an induration around each globule of the mercury; in a later stage collections of purulent matter may be discovered."

A variety of these experiments M. Cruveilhier offers for our examination, varied as they have been by him a thousand different ways, and always with the same result.

The liver being the seat of a particular system of veins, which veins are destitute of valves, and have numerous windings in the mesentery, he says, "I next drew out a knuckle of intestine, and injected quicksilver into one of the mesenteric veins. In a dog which survived this operation twenty-four hours, the liver was studded with red, superficial, and slightly prominent patches, of the colour of wine-lees, and its texture, when cut into on a level with these patches, presented the same colour to the depth of four or five lines. In the centre of each small red induration was a globule of quicksilver, a certain quantity of which had penetrated into the small veins. In another experiment on a dog which had an umbilical epiplocele, quicksilver was injected into a small vein of the omentum. In about ten weeks the animal was destroyed. The liver was studded with numerous yellowish tubercles, some of which lay near its surface, others in its substance, and each having in its centre one or more globules of quicksilver. Some of them presented two distinct strata; one of a tubercular substance at the circumference, the other of puriform matter in the centre, in the middle of which were the mercurial globules. These observations seem clearly to prove that all extraneous bodies introduced into the general circulation are inevitably conveyed to the lungs, and such as enter the abdominal venous circulation as certainly proceed to the liver; these viscera constituting a barrier, which they pass not beyond, except in certain cases. These experiments, observes Mr. Cooper, solve one difficulty, which clinical observations alone could never have solved: "How, in the hypothesis concerning phlebitis, is the pus conveyed from the general venous system into the capillary system of the liver? Should not the pus stop in the capillary vessels of the lungs? It seems as if abscesses should only take place in the latter organs; yet experience proves that abscesses of the liver are very common after injuries and surgical operations, notwithstanding that the capillary system of the liver only communicates directly with the vena porta and the hepatic veins; but this objection is at once reduced to its proper value by the demonstration of that subtle liquid, quicksilver, passing completely through the general and capillary system of the liver when injected into the branches of the vena porta, and, in other cases, passing through the general and pulmonary capillary systems, or, what is still more convincing, pervading several times the different orders of capillary vessels."

Professor Cruveilhier considers it, therefore, to be clearly made out that the pus which is introduced into the blood is retained in some part or other of the capillary system; that its tendency is to excite every where capillary phlebitis; that this inflammation is more likely to take place in the lungs than any other part; next in the liver, and next in the spleen; in fact, it appears clearly proved that pus, like quicksilver, once taken into the circulation, may be detained in the lungs or liver, or any other part of the system; it then produces circumscribed spots of inflammation, and this proceeds more or less rapidly to a state of suppuration.

This certainly appears a much more rational way of accounting for the secondary depôts found in various parts of the body, after injuries of the head, and various surgical operations, than to suppose that they existed previously in the parts where they are discovered, and were excited to take on a new sphere of action by some peculiar state of the system induced by the wound of the scalp, or the injury done to the bones.

We have been led already to discuss this subject at greater length than we at first intended. There is, however, another query which must, if possible, be answered, viz., why do not visceral abscesses take place in cases of copious accumulations of matter, as in chronic pleurisy and peritonitis? and, secondly, is a wound necessary to their development? Quesnay has noticed a great difference in relation to consecutive effects between abscesses of long standing and the suppuration from recent wounds. Now to what are we to trace this difference? Are we to conclude that absorption of pus takes place in the one and not in the other? We know that a large abscess, the opening of which has been delayed, sometimes disappears, its fluid contents

having been absorbed and taken into the system; yet it appears that the constitution does not suffer, and that this extraneous matter is thrown off by the various outlets of the body; therefore it would certainly appear that there is a very considerable difference between the effects produced by the introduction of this fluid at once into the circulation, and the introduction of similar matter by previous absorption.

M. Cruveilhier, in conclusion, adds, that what M. Dance proposed as a conjecture he has proved to be true,—that in several cases of "wounds of the head the veins of the diploe have been found purulent, and this state co-existing with numerous abscesses of the liver and lungs. Several convincing preparations of this were presented to the Anatomical Society, and at the present time it may be announced as a demonstrated truth, that, in cases of wounds of the head, the visceral abscesses of the liver, the lungs, and the spleen, are the consequences of phlebitis, and more especially phlebitis of the diploe; but the observation that inflammation of the veins of bones is a cause of visceral abscesses applies not only to the veins of the diploe, but to all the veins of bones; and I lay it down, as a general proposition, that phlebitis of the bones is one of the most frequent causes of visceral abscesses after wounds and surgical operations implicating the bones."

This conclusion is at any rate as rational as any we can come to, and far more so than many of the theories that have been from time to time advanced. The subject, however, is overshadowed by clouds and difficulties that the scalpel of the anatomist cannot break through. It is surrounded at present by a veil that human talent and understanding in vain endeavour to penetrate.

But our examination has led to some satisfactory results, inasmuch as we have discovered some of the more frequent causes of phlebitis. We are obliged to extract blood from the arm, but we are not obliged to induce death by passing a thread round a vein, or by breaking down newly-formed adhesions with a silver probe; and, therefore, although unable to trace the disease through all of its ramifications, we nevertheless are able to discover some of the more frequent causes producing it, and, if we avoid them not, we are not only wilfully blind, but culpably negligent also, and answerable for the lives we thus destroy. But this leads us to consider next the treatment of that peculiar state of the system which we have thus considered, and which we have found to arise after injuries and operations.

We have divided inflammation of the veins into two stages: first, adhesive inflammation, and second, a more advanced period comes on, when we find that this stage has passed away, and the suppurative process commenced. This view of our subject will be found of practical importance in our prognosis. I have not, be it remembered, spoken of inflammation of the veins arising without any apparent cause; traumatic phlebitis has more particularly occupied our attention; but in the Cyclopædia of Practical Medicine, Dr. R. Lee has taken up this part of the subject in a manner that leaves me nothing to say; in a manner that will amply repay an attentive perusal, and from his long and patient examination of uterine phlebitis, his remarks are entitled to the respect the opinions of this gentleman always demand. We may, however, be allowed to say that uterine phlebitis is known to be one of the worst forms of puerperal disease, and that, next to inflammation of the veins from wounds, one of the most common cases is phlebitis of the lower limb, consequent to uterine or hypogastric phlebitis; but this may arise under two distinct conditions of the body:

1st. After parturition.

2d. In cases of cancer of the womb.

We have stated the division here made is of practical importance, inasmuch as it is only during the first or adhesive stage, during that very early period of the affection when the blood is just beginning to coagulate within the vessel, that the cure can be attempted with any reasonable hope of success; for when the second stage comes on, when pus is formed and introduced into the system, medicine is of little avail; at least, all the remedial agents with which we are yet acquainted. Our treatment must be both local and general; copious bleeding, both with the lancet and with leeches, cold lotions to the part, and the free administration of calomel and opium. This is all we know at present of the treatment of the disease; but when the second stage comes on, the lancet and leeches can do no good. The quick and feeble pulse, the brown tongue, the cold wet hands, the muttering delirium, point out what it will be proper to administer. Wine, brandy, and then opium and ammonia, will be the best medicines; clysters of strong broth must be thrown up, and every means taken to support the declining powers of life; but they hold out little or no hope of success, and in spite of all we can do our poor patient is hurried to the grave.

There yet remains one point of practical importance in the treatment of phlebitis that must not be overlooked, as it is important to know at what period we are to give up extracting blood. We answer, so soon as the second stage has commenced. True, I may be answered, "by taking away the blood you remove also a portion of the poison." Granted; but in taking away the blood you also lessen the powers of reaction, and the mere taking away of this fluid does not prevent the secretion of pus, which goes on as rapidly as ever.—*Lon. Med. Gaz.*